

CLAIMS

What is claimed is:

1. A thermal enhance MCM package, comprising:
 - a first chip having a first active surface and a first bonding pad formed on the first active surface;
 - a second chip having a second active surface and a second bonding pad formed on the second active surface;
 - a substrate having an upper surface with a first mounting area, a second mounting area and a contacting area, wherein the first chip and the second chip are disposed on the first mounting area and the second mounting area respectively and are electrically connected to the substrate; and
 - a thermally conductive device disposed on the contacting area and covering the first chip and the second chip.
2. The thermal enhance MCM package of claim 1, wherein the thermally conductive device comprises a first chip connecting portion connecting the first chip, a second chip connecting portion connecting the second chip, a substrate connecting portion connecting the substrate, and a joint portion connecting the substrate connecting portion, the first chip connecting portion and the second chip connecting portion with each other, and the substrate connecting portion is attached to the contacting area.
3. The thermal enhance MCM package of claim 1, further comprising a thermally conductive adhesive attaching the thermally conductive device to the substrate.
4. The thermal enhance MCM package of claim 1, wherein the substrate further comprises a circuits layer and a via formed on the contacting area, and the via is

filled with a thermally conductive adhesive and connected to the circuits layer.

5. The thermal enhance MCM package of claim 1, wherein the substrate further comprises a grounding layer, a via formed on the contacting area, and an electrically conductive layer is formed on an inner wall of the via and electrically connected to the grounding layer.
6. The thermal enhance MCM package of claim 5, wherein the electrically conductive layer is a copper layer.
7. The thermal enhance MCM package of claim 1, wherein the first chip and the second chip are bonded and electrically connected to the substrate via bumps.
8. The thermal enhance MCM package of claim 7, further comprising an underfill disposed between the first chip and the substrate.
9. The thermal enhance MCM package of claim 7, further comprising an underfill disposed between the second chip and the substrate.
10. The thermal enhance MCM package of claim 1, wherein the thermally conductive device is a heat spreader.
11. The thermal enhance MCM package of claim 1, wherein a material of the thermally conductive device comprises copper.
12. The thermal enhance MCM package of claim 1, further comprising a plurality of solder balls formed on a lower surface of the substrate.
13. The thermal enhance MCM package of claim 2, wherein the first chip connecting portion has a first opening exposing one of the first bonding pads and the second chip connecting portion has a second opening exposing one of the second bonding pads.

14. The thermal enhance MCM package of claim 13, further comprising electrically conductive wires connecting the first bonding pad and the substrate, and connecting the second bonding pad and the substrate.
15. The thermal enhance MCM package of claim 14, wherein the conductive wires pass through the first opening and the second opening.
16. The thermal enhance MCM package of claim 15, further comprising an encapsulation encapsulating the first chip, the second chip, the substrate, the electrically conductive wires, the first chip connecting portion and the second chip connecting portion.
17. The thermal enhance MCM package of claim 16, wherein the encapsulation exposes the substrate connecting portion.
18. The thermal enhance MCM package of claim 16, wherein the encapsulation exposes the joint portion.
19. The thermal enhance MCM package of claim 16, wherein the first chip connecting portion further has a first protrusion and the encapsulation exposes the first protrusion.
20. The thermal enhance MCM package of claim 16, wherein the second chip connecting portion further has a second protrusion and the encapsulation exposes the second protrusion.
21. The thermal enhance MCM package of claim 16, further comprising a first dummy chip connecting the first chip and the first chip connecting portion, and a second dummy chip connecting the second chip and the second chip connecting portion.
22. The thermal enhance MCM package of claim 16, further comprising a first

thermally conductive bump connecting the first chip and the first chip connecting portion, and a second thermally conductive bump connecting the second chip and the second chip connecting portion.

23. The thermal enhance MCM package of claim 21, wherein the first chip and the first dummy chip are connecting with each other via a thermally conductive adhesive.
24. The thermal enhance MCM package of claim 21, wherein the second chip and the second dummy chip are connecting with each other via a thermally conductive adhesive.